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"TRADER" SERVICE SHEET
1178

ALBA 3112

3-band A.C./D.C. Superhet

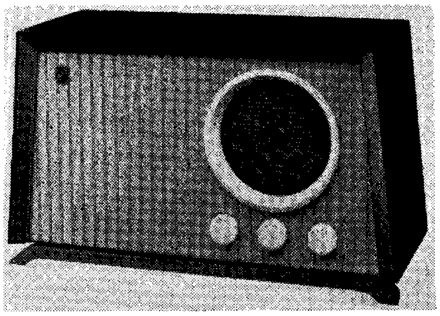
HOUSED in contemporary-styled cabinet and employing a throw-out type self-contained aerial, the Alba 3112 is a 4-valve (plus rectifier) 3-band table superhet, designed to operate from A.C. or D.C. mains of 100-110V, 200-250V (50 c/s in the case of A.C.). The waveband ranges are 16.5-53m, 190-570m and 1,200-2,000m.

Release date and original price: September 1954, *£13 10s 3d, plus purchase tax.*

CIRCUIT DESCRIPTION

Aerial input via coupling coils **L1, L2, L3** to single-tuned circuits **L4, C35** (S.W.), **L5, C35** (M.W.) and **L6, C35** (L.W.), which precede triode hexode valve **(V1, Mullard UCH42)** operating as frequency changer with internal coupling.

Oscillator grid coils **L7** (S.W.), **L8** (M.W.) and **L9** (L.W.) are tuned by **C36.** Parallel



trimming by **C37** (S.W.), **C38** (M.W.) and **C10, C39** (L.W.); series tracking by **C11** (S.W.), **C12** (M.W.) and **C13** (L.W.). Reaction-coupling from anode via the common impedance of the trackers, with added coupling on S.W. and L.W. by **L10** and **L11.**

Second valve **(V2, Mullard UF41)** is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned transformer couplings.

Intermediate frequency 470 kc/s.

Diode signal detector is part of double diode triode valve **(V3, Mullard UBC41).** Audio-

(*Continued col.* 1 *overleaf*)

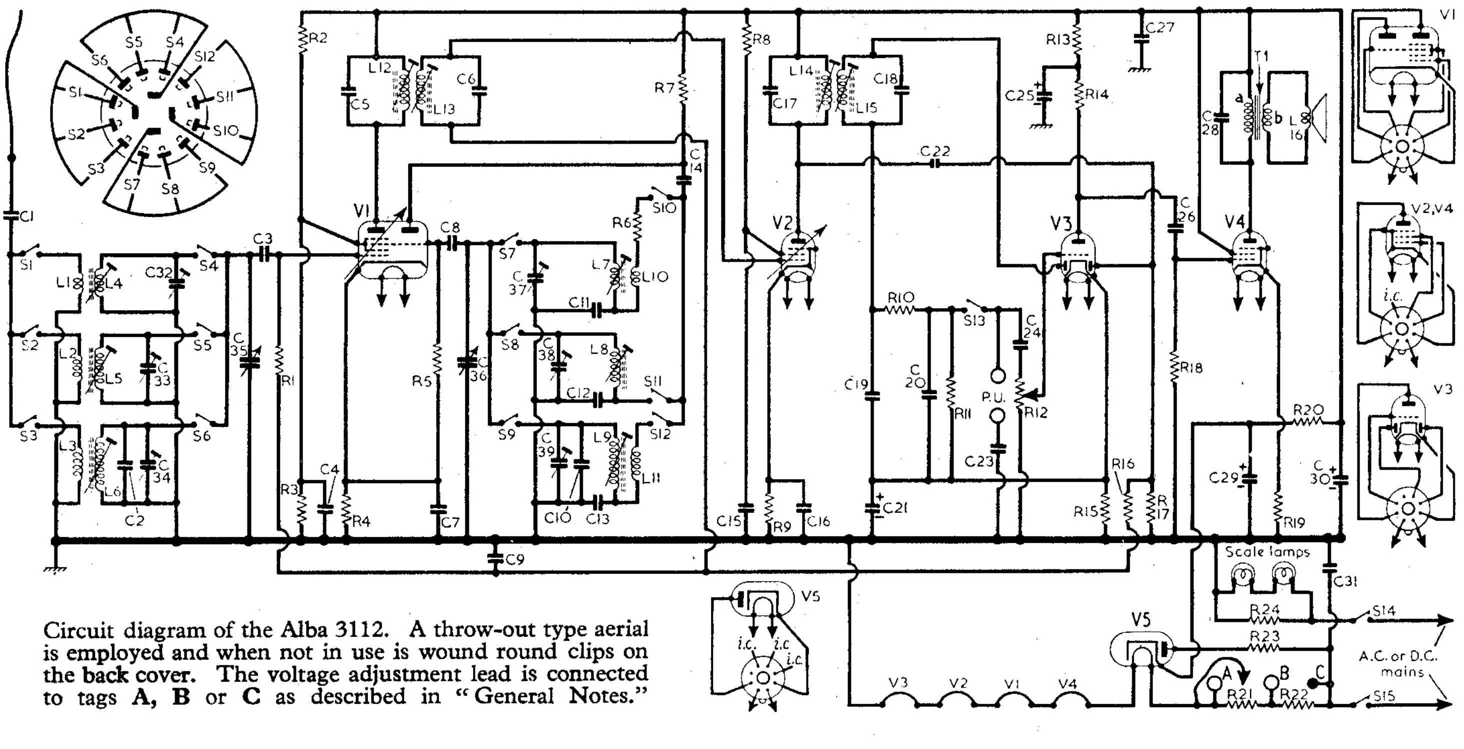
COMPONENTS AND VALUES

CAPACITORS		Values	Locations
C1	Aerial coupling ...	200pF	E4
C2	L.W. aerial trim.	100pF	E3
C3	V1 C.G.	100pF	D4
C4	V1 S.G. decoupling	0·1μF	D4
C5	1st I.F. trans. tuning	100pF	B2
C6		100pF	B2
C7	V1 cath. by-pass	0·1μF	D4
C8	V1 osc. C.G. ...	100pF	D4
C9	A.G.C. decoupling	0·05μF	C4
C10	L.W. osc. trimmer	190pF	E3
C11	S.W. osc. tracker...	5,343pF	D4
C12	M.W. osc. tracker	600pF	E4
C13	L.W. osc. tracker	270pF	E3
C14	Osc. anode coup.	100pF	D4
C15	V2 S.G. decoupling	0·1μF	C4
C16	V2 cath. by-pass	0·1μF	C4
C17	2nd I.F. trans. tuning	100pF	B1
C18		100pF	B1
C19	I.F. by-passes ...	100pF	C3
C20		100pF	D3
C21*	V3 cath. by-pass	25μF	D3
C22	A.G.C. coupling ...	12pF	C3
C23	P.U. isolator ...	0·25μF	C4
C24	A.F. coupling ...	0·005μF	C4
C25*	H.T. decoupling	16μF	B2
C26	A.F. coupling ...	0·005μF	C3
C27	R.F. by-pass ...	0·25μF	C3
C28	Tone corrector ...	0·005μF	—
C29*	H.T. smoothing	32μF	B2
C30*		32μF	B2
C31	Mains R.F. by-pass	0·02μF	B2
C32‡	S.W. aerial trim.	65pF	A2
C33‡	M.W. aerial trim.	65pF	A1
C34‡	L.W. aerial trim.	65pF	A1
C35†	Aerial tuning ...	530pF§	A1
C36†	Oscillator tuning	530pF§	A1
C37‡	S.W. osc. trim. ...	65pF	A2
C38‡	M.W. osc. trim. ...	65pF	A2
C39‡	L.W. osc. trim. ...	65pF	A1

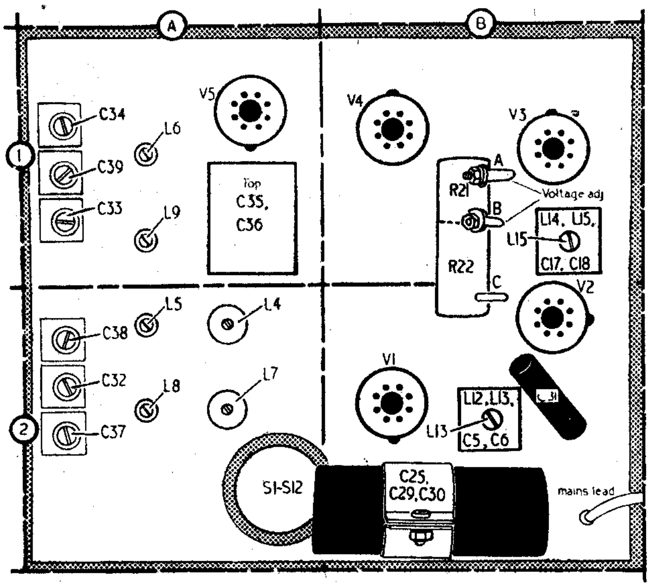
* Electrolytic. † Variable. ‡ Pre-set.
§ "Swing" value, minimum to maximum.

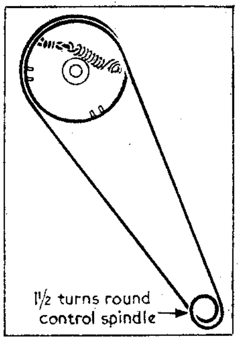
RESISTORS		Values	Locations
R1	V1 C.G.	1MΩ	D4
R2	S.G. H.T. pot. divider ...	22kΩ	D3
R3		33kΩ	D4
R4	V1 G.B.	220Ω	D4
R5	V1 osc. C.G. ...	47kΩ	D4
R6	Osc. stabilizer ...	100Ω	D4
R7	Osc. anode feed ...	27kΩ	C4
R8	V2 S.G. feed ...	90kΩ	C3
R9	V2 G.B.	330Ω	C4
R10	I.F. stopper ...	47kΩ	C3
R11	Signal diode load...	560kΩ	D3
R12	Volume control ...	0·5MΩ	D4
R13	H.T. decoupling	47kΩ	D3
R14	V3 anode load ...	47kΩ	C3
R15	V3 G.B.	2·2kΩ	D3
R16	A.G.C. decoupling	1MΩ	C3
R17	A.G.C. diode load	1MΩ	C3
R18	V4 C.G.	820kΩ	D3
R19	V4 G.B.	220Ω	D3
R20	H.T. smoothing ...	500Ω	E3
R21	Heater ballast ...	250Ω	B1
R22		965Ω	B1
R23	V5 surge limiter ...	140Ω	D3
R24	Scale lamp shunt...	100Ω	E3

OTHER COMPONENTS			Approx. Values (ohms)	Locations
L1	Aerial coupling coils		—	E4
L2			1·3	E4
L3			45·0	E3
L4	Aerial tuning coils		—	E4
L5			2·8	E4
L6			24·0	E3
L7	Oscillator tuning coils		—	E4
L8			3·8	E4
L9			7·8	E3
L10	Oscillator reaction coils		—	E4
L11			3·5	E3
L12	1st I.F. trans.	pri.	14·0	B2
L13		sec.	12·0	B2
L14	2nd I.F. trans.	pri.	15·5	B1
L15		sec.	13·0	B1
L16	Speech coil ...		3·0	—
T1	O.P. trans.	pri.	500·0	—
		sec.	—	
S1-S12	Waveband switches		—	D4
S14	Mains sw., g'd R12		—	D4
S15				



Circuit diagram of the Alba 3112. A throw-out type aerial is employed and when not in use is wound round clips on the back cover. The voltage adjustment lead is connected to tags **A, B** or **C** as described in "General Notes."





Above : Sketch of the tuning drive system as seen with the gang at minimum capacitance.

Left : Rear view of the chassis showing all the R.F. and oscillator adjustments.

Circuit Description—*continued*

frequency component in rectified output is developed across **R11** and passed via **C24,** and volume control **R12** to grid of triode section. I.F. filtering by **C19, R10, C20.**

Second diode of **V3** is fed via **C22** from **V2** anode and the resulting D.C. potential developed across diode load **R17** is fed back as bias to **V1** and **V2** giving automatic gain control.

Provision is made for the connection of a gramophone pick-up across the volume control circuit. **S13** is part of the P.U. socket assembly, and opens on the insertion of the "live" P.U. plug to prevent radio break-through.

Resistance-capacitance coupling by **R14, C26** and **R18** between **V3** and pentode output valve **V4 (Mullard UL41).** Tone correction in **V4** anode circuit by **C28**, and in the cathode circuit by the negative feed-back voltage developed across **R19.**

H.T. current is supplied by I.H.C. half-wave rectifying valve **(V5, Mullard UY41).** Smoothing by **R20** and electrolytic capacitors **C29, C30. R23** protects **V5,** and **R24** protects the scale lamps, from current surges. Mains R.F. filtering by **C31.**

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from A.C. mains of 230V. The receiver was tuned to the highest wavelength end of M.W., but there was no signal input.

Voltages were measured with an Avo Electronic Testmeter, and as this instrument has a very high internal resistance, allowance must be made for the current drawn when using other types of meter. Chassis was the negative connection in each case.

Valve	Anode		Screen		Cath.
	V	mA	V	mA	V
V1 UCH42	163 Oscillator 69	1·5 3·6	64	2·3	1·5
V2 UF41	163	3·6	72	1·1	1·3
V3 UBC41	115	0·7	—	—	1·2
V4 UL41	146	40·0	156	8·0	9·7
V5 UY41	200*	—	—	—	182·0†

* A.C. reading. † Total cathode current, 61mA.

GENERAL NOTES

Switches.—S1-S12 are the waveband switches, ganged in a single rotary unit on the front of the receiver. The unit, which is identified in both chassis views, is shown in detail inset in the circuit diagram as seen from the rear of an upright chassis, in the direction indicated by the view in location reference A2. In the associated switch table (col. 3) the operations are shown for the three control settings, starting from the fully anti-clockwise setting. A dash indicates open, and **C,** closed.

S13 is the radio muting switch. It is part of the pick-up socket assembly, and is opened by the insertion of the "live" pick-up plug.

S14, S15 are the Q.M.B. mains switches ganged with the volume control **R12.**

Scale lamps.—These are 6.3V, 0.115A lamps with small clear spherical bulbs and M.E.S. bases.

Drive Cord Replacement.—About 20 inches of nylon-braided glass yarn is required for a new drive cord, which should be run as shown in the sketch of the tuning drive system (above) starting with the gang at minimum capacitance and running off anti-clockwise round the drum.

Voltage Adjustment.—For 100-110V mains operation the wire voltage adjustment link should be connected between tags **A** and **C** on the ballast resistor (location reference B1). For 200-225V operation the link should be connected between tags **A** and **B,** and for 225-250V operation both ends of the link should be anchored to tag **A.**

CIRCUIT ALIGNMENT

I.F. Stages.—Switch receiver to M.W. and turn gang to maximum capacitance. Connect output of signal generator via an 0.1μF capacitor in each lead, to control grid (pin 6) of **V1** and chassis. Feed in a 470 kc/s (638.3m) signal and adjust the cores of **L12** (location reference C4), **L13** (B2), **L14** (C3) and **L15** (B1) for maximum output. Repeat these adjustments until no further improvement results.

R.F. and Oscillator Stages.—Check that with the gang at minimum capacitance, the cursor is horizontal and in line with the low wavelength end of the M.W. scale. Transfer signal generator "live" lead to end of throw-out aerial lead.

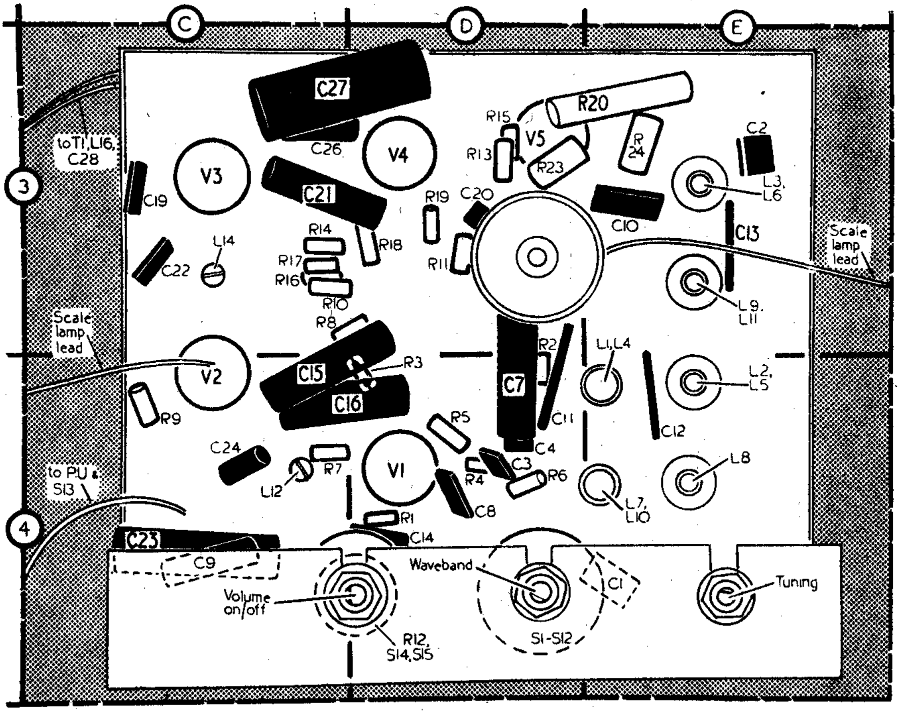
S.W.—Switch receiver to S.W., tune to 50m, feed in a 50m (6 Mc/s) signal and adjust the cores of **L7** (A2) and **L4** (A2) for maximum output. Tune receiver to 16.67m calibration dot, feed in a 16.67m (18 Mc/s) signal and adjust **C37** (A2) and **C32** (A2) for maximum output.

M.W.—Switch receiver to M.W., tune to 500m, feed in a 500m (600 kc/s) signal and adjust the cores of **L8** (A2) and **L5** (A2) for maximum output. Tune receiver to 200m, feed in a 200m (1,500 kc/s) signal and adjust **C38** (A2) and **C33** (A1) for maximum output.

L.W.—Switch receiver to L.W., tune to 1,949m, feed in a 1,949m (154 kc/s) signal and adjust the cores of **L9** (A1) and **L6** (A1) for maximum output. Tune receiver to 1,200m, feed in a 1,200m (250 kc/s) signal and adjust **C39** (A1) and **C34** (A1) for maximum output.

Switch Table

Switches	S.W.	M.W.	L.W.
S1	C	—	—
S2	—	C	—
S3	—	—	C
S4	C	—	—
S5	—	C	—
S6	—	—	C
S7	C	—	—
S8	—	C	—
S9	—	—	C
S10	C	—	—
S11	—	C	—
S12	—	—	C



Front view of chassis with tuning scale assembly removed to show components.

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